Salty Pledge

Learn more about Salty, the salt marsh harvest mouse, and create a pledge of something you will do to help protect Salty's habitat.

Who is Salty?

The salt marsh harvest mouse is endemic to the salt marshes of San Francisco, San Pablo, and Suisun bays. Endemic means that they are only found in that one area or location and no where else in the entire world!

Salt Marsh habitat
Photo credit: USFWS

During the last 120 years, over 90% of the salt marsh habitat has been lost to urban development, agriculture, and salt ponds, which have been built on historic salt marsh habitat. Due to this habitat loss, the salt marsh harvest mouse was listed as endangered by both the federal and state government in 1970.

Biologists call salt marsh harvest mice Reithrodontomys raviventris. Scientific names are in Latin or Greek. The name means "groove-toothed mouse with a red belly."

San Pablo Bay National Wildlife Refuge is home to the northern subspecies of mouse, which is called Reithrodontomys raviventris halicoetes. This subspecies can be found in the San Pablo and Suisun bays.

Don Edwards San Francisco Bay National Wildlife Refuge is home to the southern subspecies of mouse, which is called Reithrodontomys raviventris raviventris. This subspecies can be found in the marshes of Corte Madera, Richmond, and South San Francisco Bay.

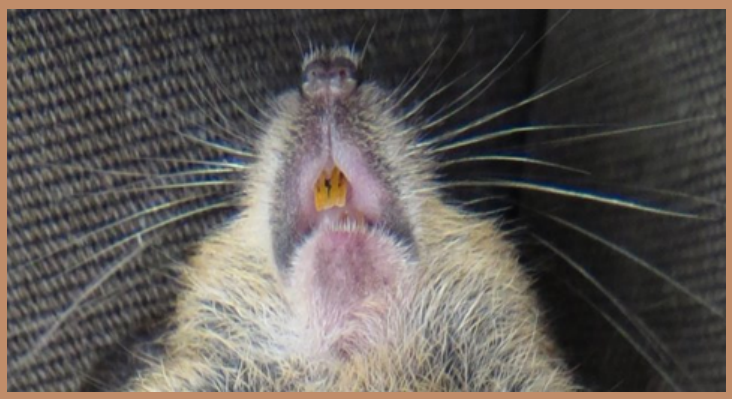
Salt Marsh Harvest Mouse
Photo credit: Rachel Tertes, USFWS

U.S. Fish & Wildlife Service
National Wildlife Refuge System
San Francisco Bay Wildlife Society
Santa Clara Valley Urban Runoff Pollution Prevention Program

They are in the Cricetidae family, which includes field mice, lemmings, muskrats, hamsters and gerbils.

Salty is the Refuge staff's nickname for the salt marsh harvest mouse. Salty is tiny, and furry, but it is no ordinary mouse. Read on to find out how it is unique!

Characteristics of Salty!



View of Salt Marsh Harvest Mouse teeth
Photo credit: USFWS

View of Salt Marsh Harvest Mouse belly
Photo credit: USFWS

Salt Marsh Harvest Mouse captured during biological survey
Photo credit: Rachel Tertes, USFWS

- Grooved Teeth
- Thick Unicolored Tail
- Thick Coat with Long Hair
- Blunt, non-pointed Tail
- Round, cupped Ears
- Red Belly (Central and Southern SFB)

What habitat does Salty call home?

The salt marsh harvest mouse lives it's entire life in the salt marsh. Salty prefers thick stands of pickleweed in which to hide, find food and build their nests.

Living in the marsh is not easy. Every 6 hours the level of the water level changes as the tide rises and falls. This means that 2 times within a 24 hour time period – the tide is low and the mud is exposed and 2 times within that same 24 hour period the tide is high and the water level covers the pickleweed plants.

Salty, has adapted to the changing of the tides that occur in and around the bay every day. During the high tide, the mouse needs to swim to find a good hiding place. During the king tides, the very highest tides in the winter months (November – January), the mouse need to travel to upland areas that are close by. These areas are referred to as high tide refugia, and are higher and drier areas that don't get covered by the tides.

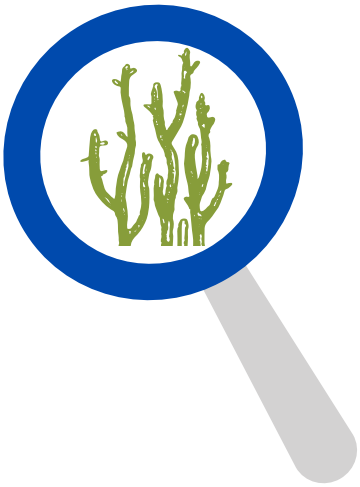
In general field mice only build underground nests. Salty, is different. Since Salty lives where the tide moves in and out, it cannot always live underground. Often, Salty, builds an elevated nest made out of dried grass among the dense pickleweed; the nest may have one to three entrances. In addition, the tides cause Salty to frequently change its nest site. They will nest in the ground if they are in a higher, drier part of the marsh.

Here is a list of characteristics of the salt marsh that Salty likes the best!

- Dense stands of pickleweed. Salty needs to hide, nest, and eat pickleweed.
- High Tide Refugia/ Ecotone, which are high and dry places next to the salt marsh, to escape to during king high tides.
- Tall vegetation like gumplant and bulrush. This gives Salty a higher plant to hide in and cling to if the tide covers up the pickleweed.
- Large areas tidal marshes that are connected to one another. The more space that Salty can move around and disperse gives them a better chance of survival! In the North bay it has been found that Salty will use up to ½ acre of marsh and in the South bay they will use about 1/3 of an acre. That's a long ways to travel for such a tiny mouse!

What does Salty eat and drink?

Pickleweed is one of the most common plants found in a salt marsh and is the favorite food of the salt marsh harvest mouse. But it is not the only food it eats. It will eat other food such as fresh green grass, seeds, and insects.



Here is list of food Salty likes to eat:

- Rabbits Foot Grass* Polypogon monspeliensis
- Fat Hen* Atriplex prostrata
- Pickleweed Sarcocornia pacifica
- Watergrass Echinochloacrus-galli
- Alkali Bulrush Bolboshoenus maritima
- Tricorner Bulrush Schoenoplectus americanus
- Saltgrass Distichlis spicata
- AND beetles, earwings, mealworms, & isopods

*Food Trials Conducted in Suisun Bay by Katie Smith, PhD.

Unlike most land mammals, which must have fresh water to drink in order to survive, the salt marsh harvest mouse can survive on the salty water and salty plants found in a salt marsh. Their kidney's are specialized and can excrete the salt out of their bodies.

Does Salty have any predators?

Yes! Salty has a lot of predators. Salty is nocturnal and hides during the day. The cover of darkness helps keep them hidden from many predators. But many nocturnal animals such as owls, raccoons, gray fox, skunks, eat Salty at night.

During high tide, which can happen during the day and night, is another time when Salty needs to hide from predators too! Egrets, California Ridgway's rail, herons, Northern harriers, short-eared owls, gulls, and snakes.

How do we know all of this?

Biologists have studied Salty for many years! They are so tiny and hide so well it would be difficult to go out to look for and find mice without using scientific tools. One way biologists check on the populations of Salty is by using small live traps, called Sherman traps. These traps are made of metal with swinging doors that ensure the mice don't get hurt when they do in the trap.

The biologists place the traps evenly spaced, long lines through large areas of marsh. At sunset the trap door is opened, and the biologists place a small amount of bird seed in the trap which will lure them in, and a small bit of cotton so the mice once trapped, can stay warm. At dawn, biologists check the trap, if they are lucky they will find one, or two salt marsh harvest mice in the live traps. Once caught, the biologists have to take a closer look to see if it is really a salt marsh harvest mouse!

There are other tools that scientists use to study Salty. These include, camera traps, telemetry, ear tags, and genetic hair samples.

Over the years, biologists from the US Fish and Wildlife Service, the California Department of Fish and Wildlife, UC Davis, and H.T. Harvey and Associates have done extensive studies on the salt marsh harvest mouse. Click here to see them in action!
https://www.youtube.com/watch?v=_P8uG45zioc

Why do we protect Salty?

The loss of salt marsh habitat to development has made it very difficult for the salt marsh harvest mouse to survive and has resulted in the salt marsh harvest mouse being listed as an endangered species.

One reason the Don Edwards San Francisco Bay National Wildlife Refuge and the San Pablo Bay National Wildlife Refuge exist is to protect endangered species. In order for the salt marsh harvest mouse to survive, salt marsh habitat must be restored and protected. Over the years the Refuge with the help of its partners have restored thousands of acres of salt marsh habitat. As a direct result, Salty is again living and breeding in areas that they have not lived in over 100 years. In 2015, we found salt marsh harvest mouse in a newly restored marsh in the South Bay!

Fun Facts about Salty!

They drink salt water

They are the size of an adult thumb! Approximately 14 centimeters (5.5 inches)

Their lifespan is only 8-12 months

They are nocturnal

They can swim and float

They weigh less than 10 grams (0.353 ounces) About the weight of a half – dollar!

What can you do to protect Salty?

Salty needs our help! In order for the plants and animals of the San Francisco Bay watershed to have healthy habitats, everyone must do their part.

There are many things kids, just like you, can do to help!

For example, there are many threats to the health of the salt marsh from increasing amounts of trash that enters the bay from local creeks and rivers. Picking up trash in our neighborhood, is one thing that we all can do to ensure that trash does not end up in the storm drains, the creeks and ultimately the bay. It is also important that we keep pollution, such as oil and soap out of the water. Encouraging your family members to use a car wash instead of washing your car at home on the street, is one way to keep soap out of the creeks and bay. Here is a graphic with more examples!

Click here for more ideas about what you can do at home to protect the Bay!

Create your Salty Pledge

Now it's your turn to make a personal pledge to protect Salty. What action can you take at home that will keep the Bay healthy and clean? Your pledge will be shared with others (optional) so they will see exactly how much you care! Be creative and let everyone know what you plan on doing to help out Salty and the environment. By sharing the pledges we can inspire others to make positive changes too!

Materials

Pencil, Crayons or Markers
Scissors

Instructions

Step 1: Download, and print the Salty mouse template (PDF template). Or download the Salty mouse (Jpeg template) on the computer to fill out the Salty mouse template digitally.
Step 2: Write down one or two actions you plan to take to help protect Salty. Write your pledge on the Salty template.
Step 3: Decorate and color your Salty pledge.

Now it's Time to Share your Salty Pledge! (optional)
Step 4: Take a picture with yourself with your Salty Pledge!
Step 5: To grant us permission to post your PHOTO, YOUR FIRST NAME, and the CITY in which you live, please have a parent/ or guardian fill out the Photo Release Form.
Step 6: Email your (1) photo (jpeg's only please) and the completed (2) Photo Release Form sfbaynwrc@fws.gov. Please put the following the Subject Line: Salty Pledge.
Step 7: Once we receive your completed submission, we will post your photo on the Don Edwards San Francisco Bay National Wildlife Refuge website (if you live near the Southern subspecies), the San Pablo Bay National Wildlife Refuge website (if you live near the Northern subspecies), and the San Francisco Bay National Wildlife Refuge Complex Facebook page.